

Patent Claims

1. Switched-mode power supply having a transformer (T1), which has a primary winding (W1) and at least one secondary winding (W2 - W6), having a switching transistor (Q1) in series with the primary winding, having a driver stage (DR) for controlling the switching transistor (Q1), and having a control circuit for controlling an output voltage (U3 - U5), with the control circuit containing an oscillator (O) which can be adjusted via a connection (4), **characterized in that** the connection (4) is coupled to a secondary winding (W6) in order to determine the switch-on time of the switching transistor (Q1) by means of oscillation which occurs on the second winding (W6).
2. Switched-mode power supply according to Claim 1, **characterized in that** a switching stage (T1, T2) is arranged between the connection (4) and the secondary winding (W6) and passes on a supply voltage (V_{Ref}) to the connection (4) when a sudden voltage change occurs on the secondary winding (W6) at the time of an oscillation after a demagnetization phase of the transformer (T1).
3. Switched-mode power supply according to Claim 2, **characterized in that** the secondary winding (W6) produces a positive voltage pulse, which switches on the switching stage (T1, T2), when an oscillation occurs.
4. Switched-mode power supply according to Claim 2 or 3, **characterized in that** a voltage divider (R6, T7, R8) is arranged between the switching stage (T1, T2) and the secondary winding (W6) in order to set a threshold value for the switching stage (T1, T2).

5. Switched-mode power supply according to Claim 2, 3 or 4, **characterized in that** a capacitor (C4) is arranged between the switching stage (T1, T2) and the secondary winding (W6) in order to limit a voltage pulse.
6. Switched-mode power supply according to one of the preceding claims, **characterized in that** the switching stage (T1, T2) is coupled to an output (6) of the driver states (DR) in order to block the switching stage (T1, T2) when the switching transistor (Q1) is switched on.
7. Switched-mode power supply according to Claim 6, **characterized in that** the switching stage (T1, T2) is coupled via a resistor (R5) and a diode (D1) to the output (6) of the driver states (DR).
8. Switched-mode power supply according to one of the preceding Claims 4 to 7, **characterized in that** the switching stage (T1, T2) has a first switch (T1), which is connected between the supply voltage (V_{Ref}) and the connection (4) and is switched on by a second switch (T1) when the voltage on the secondary winding (W6) exceeds the threshold value predetermined by the voltage divider (T6 - R8).
9. Switched-mode power supply according to one of the preceding claims, **characterized in that** the secondary winding is an auxiliary winding (W6) on the primary side of the transformer (TR).
10. Switched-mode power supply according to one of the preceding claims, **characterized in that** the control circuit and the oscillator (O) are arranged in an integrated circuit (IC1), in that the oscillator (O) is controlled by an external circuit (R1, Ct) with a sawtooth voltage via the connection (4), and in that a logic circuit (LO) in the integrated circuit (IC1) in

each case alternately uses a sawtooth pulse (SZ1) from the sawtooth voltage to limit the time for which the switch transistor (Q1) is switched on and a sawtooth pulse (SZ2, SZ2') from the sawtooth voltage in order to determine the phase in which the switching transistor (Q1) is switched off.

11. Switched-mode power supply according to Claim 10, **characterized in that** the supply voltage (V_{Ref}) is a reference voltage (V_{Ref}) which is produced via an output (9) of the integrated circuit.